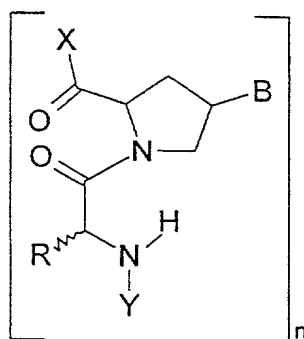


CLAIMS

- 5 1. A compound of formula (I):



(I)

where n is 1 or 2-200,

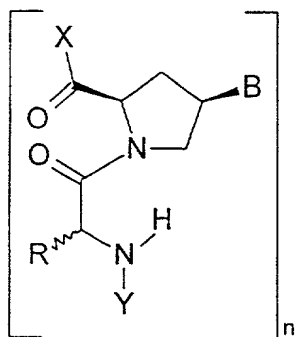
B is a protected or unprotected base capable of Watson-Crick or of Hoogsteen pairing,

- 10 R is H, C₁ - C₁₂ alkyl, C₆ - C₁₂ aralkyl or C₆ - C₁₂ heteroaryl which may carry one or more substituents preferably selected from hydroxyl, carboxyl, amine, amide, thiol, thioether or phenol.

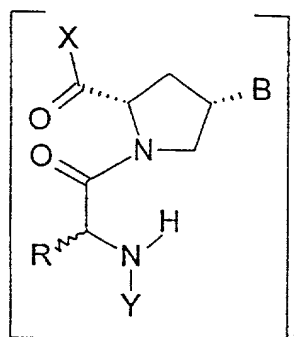
X is OH or OR' where R' is a protecting group or an activating group or a lipophilic group or an amino acid or amino amide or nucleoside,

- 15 Y is H or a protecting group or a lipophilic group or an amino acyl group or nucleoside.

2. A compound as claimed in claim 1, wherein the structure is (II) or (III) where n, B, R, X and Y are as defined in claim 1.



(II)



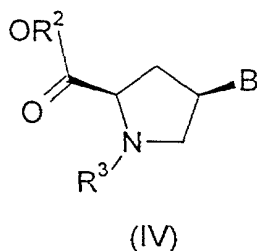
(III)

3. A compound as claimed in claim 1 or claim 2, wherein B is a naturally occurring nucleobase selected from adenine, cytosine, guanine, thymine and uracil.
4. A compound as claimed in any one of claims 1 to 3, wherein -CO-CHR-NH- is a residue of a naturally occurring amino acid.
5. A compound as claimed in any one of claims 1 to 4, wherein R is CH₂OH or (CH₂)₄NH₂ or H.
6. A compound as claimed in claim 1, wherein n is 1,
- B is a naturally occurring nucleobase selected from adenine, cytosine, guanine, thymine and uracil.,
- R is H or CH₂OH or (CH₂)₄NH₂,
- X is OH or OR',
- R' is an activating group for example pentafluorophenyl,
- Y is H or a protecting group for example Fmoc.
7. A compound as claimed in any one of claims 1 to 5, wherein n is 2-200 preferably 5-30.
8. A hybrid comprising two strands of which a first strand is a compound according to claim 7 and a second strand is an oligo- or polynucleotide or nucleic acid.

9. A hybrid as claimed in claim 8, wherein the two strands are hybridised to one another in a 1:1 molar ratio by base-specific Watson-Crick base pairing.
10. A method of making the peptide nucleotide analogue of
5 formula (I), comprising the steps of:
- a) reacting an N-protected C-protected 4-hydroxy proline with a base selected from N₃-protected thymine, N₆-protected adenine, N₄-protected cytosine, N₂-O₆-protected guanine and N₃-protected uracil.
 - b) deprotecting the proline amino group of the product of a),
 - 10 c) reacting the product of b) with an N-protected amino acid,
 - d) optionally removing protecting groups from the product of c).
11. A method as claimed in claim 10, wherein in a) 4-hydroxyproline in the form of a N-Boc/Dpm ester is reacted with N₃-benzoyl thymine, N₆-benzoyl adenine, N₄-benzoyl cytosine, N₂-benzoyl-
15 O₆-(4'-nitrophenylethyl)guanine or N₃-benzoyl uracil, and in c) an Fmoc amino acid ester is used.
12. A method as claimed in claim 10 or claim 11, wherein an N-protected C-protected trans-4-hydroxy proline is used in a).
13. A method of converting a peptide nucleotide analogue of
20 formula (I) in which n is 1 into a peptide oligonucleotide of formula (I) in which n is 2-200, comprising the steps of:
- i) providing a support carrying primary amine groups,
 - ii) coupling an N-protected peptide nucleotide analogue of formula (I) to the support,
 - 25 iii) removing the N-protecting group,
 - iv) coupling an N-protected nucleotide analogue of formula (I) to the thus-derivatised support,
 - v) repeating steps iii) and iv) one or more times, and
 - vi) optionally removing the resulting peptide oligonucleotide from
30 the support.

14. A method as claimed in claim 13, wherein a pentafluorophenyl ester of the peptide nucleotide analogue is used in step ii) and iii).

15. A compound of formula (IV)



5

where R^2 is H or a protecting group,

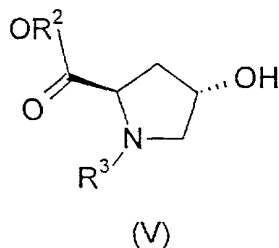
R^3 is H or a protecting group compatible with R^2 , and

B is a protected or unprotected heterocyclic base.

16. A compound as claimed in claim 15, wherein R^2 is diphenylmethyl and R^3 is t-butoxycarbonyl.

17. A compound as claimed in claim 15 or claim 16, wherein B is a protected or unprotected nucleobase selected from adenine, cytosine, guanine, thymine and uracil.

18. A compound of formula (V)



15

where R^2 is diphenylmethyl, and

R^3 is t-butoxycarbonyl.

19. A compound as claimed in any one of claims 1 to 7, wherein at least one of B, R, X and Y includes a signal moiety.